



## Complete Summary

---

### TITLE

Esophageal cancer: esophageal resection mortality rate.

### SOURCE(S)

AHRQ quality indicators. Guide to inpatient quality indicators: quality of care in hospitals - volume, mortality, and utilization [version 3.1]. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2007 Mar 12. 91 p.

AHRQ quality indicators. Inpatient quality indicators: technical specifications [version 3.2]. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2008 Feb 29. 37 p.

## Measure Domain

### PRIMARY MEASURE DOMAIN

Outcome

The validity of measures depends on how they are built. By examining the key building blocks of a measure, you can assess its validity for your purpose. For more information, visit the [Measure Validity](#) page.

### SECONDARY MEASURE DOMAIN

Does not apply to this measure

## Brief Abstract

### DESCRIPTION

This measure is used to assess the number of deaths per 100 patients with discharge procedure code of esophageal resection.

Risk adjustment for clinical factors is recommended because of the confounding bias for esophageal resection. In addition, little evidence exists supporting the construct validity of this indicator.

### RATIONALE

About 30% of personal health care expenditures in the United States go towards hospital care, and the rate of growth in spending for hospital services has only

recently leveled out after several years of increases following a half a decade of declining growth. Simultaneously, concerns about the quality of health care services have reached a crescendo with the Institute of Medicine's series of reports describing the problem of medical errors and the need for a complete restructuring of the health care system to improve the quality of care. Policymakers, employers, and consumers have made the quality of care in U.S. hospitals a top priority and have voiced the need to assess, monitor, track, and improve the quality of inpatient care.

Esophageal cancer surgery is a rare procedure that requires technical proficiency; and errors in surgical technique or management may lead to clinically significant complications, such as sepsis, pneumonia, anastomotic breakdown, and death. Better processes of care may reduce mortality for esophageal resection, which represents better quality care.

Esophageal resection is a complex cancer surgery, and studies have noted that providers with higher volumes have lower mortality rates. This suggests that providers with higher volumes have some characteristics, either structurally or with regard to processes, that influence mortality.

**Note:**

The following caveats were identified from the literature review for the "Esophageal Resection Mortality Rate" indicator:

- *Confounding bias<sup>a</sup>*: Patient characteristics may substantially affect the performance of the indicator; risk adjustment is recommended.
- *Unclear construct<sup>a</sup>*: There is uncertainty or poor correlation with widely accepted process measures.

Refer to the original measure documentation for further details.

**a** - The concern is theoretical or suggested, but no specific evidence was found in the literature.

## **PRIMARY CLINICAL COMPONENT**

Esophageal cancer; esophageal resection; mortality

## **DENOMINATOR DESCRIPTION**

Discharges, age 18 years and older, with International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) codes for esophageal resection in any procedure field and a diagnosis code of esophageal cancer in any field

Exclude cases:

- Missing discharge disposition
- Transferring to another short-term hospital
- Major Diagnostic Category (MDC) 14 (pregnancy, childbirth, and puerperium)
- MDC 15 (newborns and other neonates)

**Note:** Refer to the Technical Specifications document for specific ICD-9-CM codes.

## **NUMERATOR DESCRIPTION**

Number of deaths among cases meeting the inclusion and exclusion rules for the denominator

### **Evidence Supporting the Measure**

## **EVIDENCE SUPPORTING THE CRITERION OF QUALITY**

- One or more research studies published in a National Library of Medicine (NLM) indexed, peer-reviewed journal

### **Evidence Supporting Need for the Measure**

## **NEED FOR THE MEASURE**

Variation in quality for the performance measured

## **EVIDENCE SUPPORTING NEED FOR THE MEASURE**

AHRQ quality indicators. Guide to inpatient quality indicators: quality of care in hospitals - volume, mortality, and utilization [version 3.1]. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2007 Mar 12. 91 p.

### **State of Use of the Measure**

## **STATE OF USE**

Current routine use

## **CURRENT USE**

External oversight/State government program  
Internal quality improvement  
Quality of care research

### **Application of Measure in its Current Use**

## **CARE SETTING**

Hospitals

## **PROFESSIONALS RESPONSIBLE FOR HEALTH CARE**

Physicians

## **LOWEST LEVEL OF HEALTH CARE DELIVERY ADDRESSED**

Single Health Care Delivery Organizations

**TARGET POPULATION AGE**

Age greater than or equal to 18 years

**TARGET POPULATION GENDER**

Either male or female

**STRATIFICATION BY VULNERABLE POPULATIONS**

Unspecified

**Characteristics of the Primary Clinical Component**

**INCIDENCE/PREVALENCE**

Esophageal resection is a relatively uncommon procedure; Patti et al. noted that most hospitals perform 10 or fewer procedures during a 5-year period.

**EVIDENCE FOR INCIDENCE/PREVALENCE**

Patti MG, Corvera CU, Glasgow RE, Way LW. A hospital's annual rate of esophagectomy influences the operative mortality rate. J Gastrointest Surg 1998 Mar-Apr;2(2):186-92. [PubMed](#)

**ASSOCIATION WITH VULNERABLE POPULATIONS**

Unspecified

**BURDEN OF ILLNESS**

Unspecified

**UTILIZATION**

Unspecified

**COSTS**

Unspecified

**Institute of Medicine National Healthcare Quality Report Categories**

**IOM CARE NEED**

Getting Better

## **IOM DOMAIN**

Effectiveness

### **Data Collection for the Measure**

## **CASE FINDING**

Users of care only

## **DESCRIPTION OF CASE FINDING**

Discharges, age 18 years and older, with esophageal cancer who had esophageal resection (see the "Denominator Inclusions/Exclusions" field)

## **DENOMINATOR SAMPLING FRAME**

Patients associated with provider

## **DENOMINATOR INCLUSIONS/EXCLUSIONS**

### **Inclusions**

Discharges, age 18 years and older, with International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) codes for esophageal resection in any procedure field and a diagnosis code of esophageal cancer in any field

**Note:** Refer to the Technical Specifications document for specific ICD-9-CM codes.

### **Exclusions**

Exclude cases:

- Missing discharge disposition
- Transferring to another short-term hospital
- Major Diagnostic Category (MDC) 14 (pregnancy, childbirth, and puerperium)
- MDC 15 (newborns and other neonates)

## **RELATIONSHIP OF DENOMINATOR TO NUMERATOR**

All cases in the denominator are equally eligible to appear in the numerator

## **DENOMINATOR (INDEX) EVENT**

Clinical Condition  
Institutionalization  
Therapeutic Intervention

## **DENOMINATOR TIME WINDOW**

Time window is a single point in time

## **NUMERATOR INCLUSIONS/EXCLUSIONS**

### **Inclusions**

Number of deaths among cases meeting the inclusion and exclusion rules for the denominator

### **Exclusions**

Unspecified

## **MEASURE RESULTS UNDER CONTROL OF HEALTH CARE PROFESSIONALS, ORGANIZATIONS AND/OR POLICYMAKERS**

The measure results are somewhat or substantially under the control of the health care professionals, organizations and/or policymakers to whom the measure applies.

## **NUMERATOR TIME WINDOW**

Institutionalization

## **DATA SOURCE**

Administrative data

## **LEVEL OF DETERMINATION OF QUALITY**

Not Individual Case

## **OUTCOME TYPE**

Clinical Outcome

## **PRE-EXISTING INSTRUMENT USED**

Unspecified

## **Computation of the Measure**

## **SCORING**

Rate

## **INTERPRETATION OF SCORE**

Better quality is associated with a lower score

## **ALLOWANCE FOR PATIENT FACTORS**

Analysis by subgroup (stratification on patient factors, geographic factors, etc.)  
Case-mix adjustment  
Risk adjustment method widely or commercially available

## **DESCRIPTION OF ALLOWANCE FOR PATIENT FACTORS**

Observed (raw) rates may be stratified by hospitals, age groups, race/ethnicity categories, sex, and payer categories.

Risk adjustment of the data is recommended using, at minimum, age, sex, and 3M™ All-Patient Refined Diagnosis-Related Groups (APR-DRGs)\*.

Application of multivariate signal extraction (MSX) to smooth risk adjusted rates is also recommended.

\***Note:** Information on the 3M™ APR-DRG system is available at [http://www.3m.com/us/healthcare/his/products/coding/refined\\_drq.jhtml](http://www.3m.com/us/healthcare/his/products/coding/refined_drq.jhtml).

## **STANDARD OF COMPARISON**

External comparison at a point in time  
External comparison of time trends  
Internal time comparison

### **Evaluation of Measure Properties**

## **EXTENT OF MEASURE TESTING**

Each potential quality indicator was evaluated against the following six criteria, which were considered essential for determining the reliability and validity of a quality indicator: face validity, precision, minimum bias, construct validity, fosters real quality improvement, and application. The project team searched Medline for articles relating to each of these six areas of evaluation. Additionally, extensive empirical testing of all potential indicators was conducted using the 1995-97 Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases (SID) and Nationwide Inpatient Sample (NIS) to determine precision, bias, and construct validity. Table 2 in the original measure documentation summarizes the results of the literature review and empirical evaluations on the Inpatient Quality Indicators. Refer to the original measure documentation for details.

## **EVIDENCE FOR RELIABILITY/VALIDITY TESTING**

AHRQ quality indicators. Guide to inpatient quality indicators: quality of care in hospitals - volume, mortality, and utilization [version 3.1]. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2007 Mar 12. 91 p.

### **Identifying Information**

## **ORIGINAL TITLE**

Esophageal resection mortality rate (IQI 8).

**MEASURE COLLECTION**

[Agency for Healthcare Research and Quality \(AHRQ\) Quality Indicators](#)

**MEASURE SET NAME**

[Agency for Healthcare Research and Quality \(AHRQ\) Inpatient Quality Indicators](#)

**DEVELOPER**

Agency for Healthcare Research and Quality

**FUNDING SOURCE(S)**

Agency for Healthcare Research and Quality (AHRQ)

**COMPOSITION OF THE GROUP THAT DEVELOPED THE MEASURE**

The Agency for Healthcare Research and Quality (AHRQ) Quality Indicators are in the public domain and the specifications come from multiple sources, including the published and unpublished literature, users, researchers, and other organizations. AHRQ as an agency is responsible for the content of the indicators.

**FINANCIAL DISCLOSURES/OTHER POTENTIAL CONFLICTS OF INTEREST**

None

**ENDORSER**

National Quality Forum

**ADAPTATION**

Measure was not adapted from another source.

**RELEASE DATE**

2002 Jun

**REVISION DATE**

2008 Feb

**MEASURE STATUS**

This is the current release of the measure.



This measure updates previous versions:

- AHRQ quality indicators. Guide to inpatient quality indicators: quality of care in hospitals -- volume, mortality, and utilization [version 3.0]. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2006 Feb 20. 99 p.
- AHRQ quality indicators. Inpatient quality indicators: technical specifications [version 3.1]. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2007 Mar 12. 37 p.

## **SOURCE(S)**

AHRQ quality indicators. Guide to inpatient quality indicators: quality of care in hospitals - volume, mortality, and utilization [version 3.1]. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2007 Mar 12. 91 p.

AHRQ quality indicators. Inpatient quality indicators: technical specifications [version 3.2]. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2008 Feb 29. 37 p.

## **MEASURE AVAILABILITY**

The individual measure, "Esophageal Resection Mortality Rate (IQI 8)," is published in "AHRQ Quality Indicators. Guide to Inpatient Quality Indicators: Quality of Care in Hospitals -- Volume, Mortality, and Utilization" and "AHRQ Quality Indicators. Inpatient Quality Indicators: Technical Specifications." These documents are available in Portable Document Format (PDF) from the [Inpatient Quality Indicators Download](#) page at the Agency for Healthcare Research and Quality (AHRQ) Quality Indicators Web site.

For more information, please contact the QI Support Team at [support@qualityindicators.ahrq.gov](mailto:support@qualityindicators.ahrq.gov).

## **COMPANION DOCUMENTS**

The following are available:

- AHRQ quality indicators. Inpatient quality indicators: software documentation, SAS [version 3.2]. 2008 Mar 10: Agency for Healthcare Research and Quality (AHRQ); 2008 Mar 10. 43 p. This document is available in Portable Document Format (PDF) from the [Agency for Healthcare Research and Quality \(AHRQ\) Quality Indicators Web site](#).
- AHRQ quality indicators. Software documentation: Windows [version 3.2]. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2008 Mar 10. 99 p. This document is available in PDF from the [AHRQ Quality Indicators Web site](#).
- Inpatient quality indicators (IQI): covariates, version 3.1. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2007 Mar 12. 29 p. This document is available in PDF from the [AHRQ Quality Indicators Web site](#).
- Inpatient quality indicators (IQI): covariates (with POA), version 3.1. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2007

Mar 12. 29 p. This document is available in PDF from the [AHRQ Quality Indicators Web site](#).

- Remus D, Fraser I. Guidance for using the AHRQ quality indicators for hospital-level public reporting or payment. Rockville (MD): Agency for Healthcare Research and Quality; 2004 Aug. 24 p. This document is available in PDF from the [AHRQ Quality Indicators Web site](#).
- AHRQ summary statement on comparative hospital public reporting. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2005 Dec. 1 p. This document is available in PDF from the [AHRQ Quality Indicators Web site](#).
- Guidance for using the AHRQ quality indicators for public reporting or payment - appendix A: current uses of AHRQ quality indicators and considerations for hospital-level reporting. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2005 Dec. A1-13 p. This document is available in PDF from the [AHRQ Quality Indicators Web site](#).
- Guidance for using the AHRQ quality indicators for public reporting or payment - appendix B: public reporting evaluation framework--comparison of recommended evaluation criteria in five existing national frameworks. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2005 Dec. B1-4 p. This document is available in PDF from the [AHRQ Quality Indicators Web site](#).
- AHRQ inpatient quality indicators - interpretive guide. Irving (TX): Dallas-Fort Worth Hospital Council Data Initiative; 2002 Aug 1. 9 p. This guide helps you to understand and interpret the results derived from the application of the Inpatient Quality Indicators software to your own data and is available in PDF from the [AHRQ Quality Indicators Web site](#).
- UCSF-Stanford Evidence-based Practice Center. Davies GM, Geppert J, McClellan M, et al. Refinement of the HCUP quality indicators. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2001 May. 24 p. (Technical review; no. 4). This document is available in PDF from the [AHRQ Quality Indicators Web site](#).
- HCUPnet. [internet]. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2004 [accessed 2007 May 21]. [Various pagings]. HCUPnet is available from the [AHRQ Web site](#). See the related [QualityTools](#) summary.

## **NQMC STATUS**

This NQMC summary was completed by ECRI on December 4, 2002. The information was verified by the Agency for Healthcare Research and Quality on December 26, 2002. This NQMC summary was updated by ECRI on April 7, 2004, August 19, 2004, and March 4, 2005. The information was verified by the measure developer on April 22, 2005. This NQMC summary was updated again by ECRI Institute on August 17, 2006, on May 29, 2007, and again on October 20, 2008.

## **COPYRIGHT STATEMENT**

No copyright restrictions apply.

## **Disclaimer**

## **NQMC DISCLAIMER**

The National Quality Measures Clearinghouse™ (NQMC) does not develop, produce, approve, or endorse the measures represented on this site.

All measures summarized by NQMC and hosted on our site are produced under the auspices of medical specialty societies, relevant professional associations, public and private organizations, other government agencies, health care organizations or plans, individuals, and similar entities.

Measures represented on the NQMC Web site are submitted by measure developers, and are screened solely to determine that they meet the NQMC Inclusion Criteria which may be found at <http://www.qualitymeasures.ahrq.gov/about/inclusion.aspx>.

NQMC, AHRQ, and its contractor ECRI Institute make no warranties concerning the content or its reliability and/or validity of the quality measures and related materials represented on this site. The inclusion or hosting of measures in NQMC may not be used for advertising or commercial endorsement purposes.

Readers with questions regarding measure content are directed to contact the measure developer.

© 2008 National Quality Measures Clearinghouse

Date Modified: 11/24/2008

